Gunter, Jason

From:

Nations, Mark <mnations@doerun.com>

Sent:

Friday, June 13, 2014 4:27 AM

To:

Gunter, Jason

Cc:

Yingling, Mark; James, Kevin; Neaville, Chris; Wohl, Matthew; robert.hinkson@dnr.mo.gov; brandon.wiles@dnr.mo.gov; Ty Morris (TMorris@barr.com); Hedrick, Samantha K.

Subject:

Leadwood Progress Report

Attachments:

LW 05-14[1].doc; 2014-05-28 LW NPDES Pace Lab Report.pdf

Jason, attached is the May progress report.

Mark

Superfund

4,2



Remediation Group

Mark Nations
Mining Properties Manager
mnations@doerun.com

June 12, 2014

Mr. Jason Gunter Remedial Project Manager U.S. Environmental Protection Agency Region 7 - Superfund Branch 11201 Renner Blvd. Lenexa, KS 66219

Re: The Doe Run Company - Leadwood Mine Tailings Site Monthly Progress Report

Dear Mr. Gunter:

As required by Article VI, Section 50 of the Unilateral Administrative Order (Docket No. CERCLA-07-2006-0272) for the referenced project and on behalf of The Doe Run Company, the progress report for the period May 1, 2014 through May 31, 2014 is enclosed. If you have any questions or comments, please call me at 573-518-0800.

Sincerely,

Mark Nations

Mining Properties Manager

Enclosures

c: Mark Yingling – TDRC (electronic only)

Kevin James – TDRC (electronic only)

Chris Neaville – TDRC (electronic only)

Matt Wohl – TDRC (electronic only)

Robert Hinkson - MDNR

Brandon Wiles - MDNR

Ty Morris - Barr Engineering

Leadwood Mine Tailings Site

Leadwood, Missouri

Removal Action - Monthly Progress Report

Period: May 1, 2014 – May 31, 2014

1. Actions Performed or Completed This Period:

- a. Work continued on the development of the Post Removal Site Control Plan for the site.
- b. Work continued on a long-term surface water management plan for the site.

2. Data and Results Received This Period:

a. During this period, water samples were collected from downstream of Leadwood Dam and the East Seep and Erosion Area, as well as from upstream and downstream of the confluence of Eaton Creek with Big River. The analytical results for this event are included with this progress report.

During this period, the Ambient Air Monitoring Report for February 2014 was completed. Any issues identified in this report are discussed below. A copy of this document has been sent to your attention.

3. Scheduled Activities not Completed This Period:

a. None.

4. Planned Activities for Next Period:

- a. Finalize and submit the Post Removal Site Control Plan for the site.
- b. Continue to work on a long-term surface water management plan for the site.
- c. Complete monthly water sampling activities as described in the Removal Action Work Plan.
- d. Complete air monitoring activities as described in the Removal Action Work Plan.

5. Changes in Personnel:

a. None.

6. Issues or Problems Arising This Period:

a. None.

7. Resolution of Issues or Problems Arising This Period:

a. None.





June 04, 2014

Amy Sanders The Doe Run Company P. O. Box 500 Viburnum, MO 65566

RE: Project: NPDES MONTHLY (LEADWOOD)

Pace Project No.: 60170146

Dear Amy Sanders:

Enclosed are the analytical results for sample(s) received by the laboratory on May 29, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

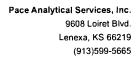
Jamie Church

jamie.church@pacelabs.com

Project Manager

Enclosures







CERTIFICATIONS

Project:

NPDES MONTHLY (LEADWOOD)

Pace Project No.:

60170146

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 13-012-0 Illinois Certification #: 003097 lowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407-13-4 Utah Certification #: KS000212013-3 Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project:

NPDES MONTHLY (LEADWOOD)

Pace Project No.: 60170146

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|-------------|---------------------|--------|----------------|----------------|
| 60170146001 | LEADWOOD 001 | Water | 05/28/14 12:10 | 05/29/14 08:30 |
| 60170146002 | LEADWOOD 002 | Water | 05/28/14 11:53 | 05/29/14 08:30 |
| 60170146003 | LEADWOOD UPSTREAM | Water | 05/28/14 10:20 | 05/29/14 08:30 |
| 60170146004 | LEADWOOD DOWNSTREAM | Water | 05/28/14 12:25 | 05/29/14 08:30 |



SAMPLE ANALYTE COUNT

Project:

NPDES MONTHLY (LEADWOOD)

Pace Project No.:

60170146

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|-------------|---------------------|-----------|----------|----------------------|------------|
| 60170146001 | LEADWOOD 001 | EPA 200.7 | NDJ | 3 | PASI-K |
| | | SM 2540D | ESM | 1 | PASI-K |
| | | SM 2540F | JML | 1 | PASI-K |
| | | EPA 300.0 | OL | 1 | PASI-K |
| 60170146002 | LEADWOOD 002 | EPA 200.7 | NDJ | 3 | PASI-K |
| | | SM 2540D | ESM | 1 | PASI-K |
| | | SM 2540F | JML | 1 | PASI-K |
| | | EPA 300.0 | OL | 1 | PASI-K |
| 60170146003 | LEADWOOD UPSTREAM | EPA 200.7 | NDJ | 6 | PASI-K |
| | | EPA 200.7 | NDJ | 3 | PASI-K |
| | | SM 2540D | ESM | 1 | PASI-K |
| | | EPA 300.0 | OL | 1 | PASI-K |
| 60170146004 | LEADWOOD DOWNSTREAM | EPA 200.7 | NDJ | 6 | PASI-K |
| | | EPA 200.7 | NDJ | 3 | PASI-K |
| | | SM 2540D | ESM | 1 | PASI-K |
| | | EPA 300.0 | OL | 1 | PASI-K |

REPORT OF LABORATORY ANALYSIS



Project:

NPDES MONTHLY (LEADWOOD)

Pace Project No.: 60170146

| Sample: LEADWOOD 001 | Lab ID: | 60170146001 | Collected | 1: 05/28/14 | 12:10 | Received: 05/ | 29/14 08:30 Ma | atrix: Water | |
|-------------------------------|---------------|----------------|-------------|-------------|--------|----------------|----------------|--------------|------|
| | | | Report | | | | | | |
| Parameters | Results | Units | Limit | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
| 200.7 Metals, Total | Analytica | 1 Method: EPA | 200.7 Prepa | ration Meth | od: EP | A 200.7 | | | |
| Cadmium | 3.0J (| ug/L | 5.0 | 0.56 | 1 | 05/30/14 17:00 | 06/02/14 14:09 | 7440-43-9 | |
| Lead | 6.0 ເ | ıg/L | 5.0 | 2.2 | 1 | 05/30/14 17:00 | 06/02/14 14:09 | 7439-92-1 | |
| Zinc | 2370 (| ıg/L | 50.0 | 12.5 | 1 | 05/30/14 17:00 | 06/02/14 14:09 | 7440-66-6 | |
| 2540D Total Suspended Solids | Analytica | I Method: SM 2 | 2540D | | | | | | |
| Total Suspended Solids | ND r | ng/L | 5.0 | 5.0 | 1 | | 05/30/14 10:03 | | |
| 2540F Total Settleable Solids | Analytica | l Method: SM 2 | 2540F | | | | | | |
| Total Settleable Solids | ND r | mL/L/hr | 0.20 | 0.20 | 1 | | 05/30/14 07:45 | | |
| 300.0 IC Anions 28 Days | Analytica | l Method: EPA | 300.0 | | | | | | |
| Sulfate | 269 r | mg/L | 50.0 | 4.9 | 50 | | 06/01/14 23:42 | 14808-79-8 | |



Project:

NPDES MONTHLY (LEADWOOD)

Pace Project No.: 60170146

| Sample: LEADWOOD 002 | Lab ID: | 6017014600 | 2 Collected | 1: 05/28/14 | 11:53 | Received: 05/ | 29/14 08:30 Ma | atrix: Water | |
|-------------------------------|---------------|-------------|-------------|-------------|--------|----------------|----------------|--------------|------|
| | | | Report | - | | | | | |
| Parameters | Results | Units | Limit | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
| 200.7 Metals, Total | Analytical | Method: EPA | 200.7 Prepa | ration Meth | od: EP | A 200.7 | | | |
| Cadmium | 3.8J u | ıg/L | 5.0 | 0.56 | 1 | 05/30/14 17:00 | 06/02/14 14:11 | 7440-43-9 | |
| Lead | 8.1 u | ıg/L | 5.0 | 2.2 | 1 | 05/30/14 17:00 | 06/02/14 14:11 | 7439-92-1 | |
| Zinc | 3710 t | ıg/L | 50.0 | 12.5 | 1 | 05/30/14 17:00 | 06/02/14 14:11 | 7440-66-6 | |
| 2540D Total Suspended Solids | Analytical | Method: SM | 2540D | | | | | | |
| Total Suspended Solids | ND r | ng/L | 5.0 | 5.0 | 1 | | 05/30/14 10:03 | | |
| 2540F Total Settleable Solids | Analytica | Method: SM | 2540F | | | | | | |
| Total Settleable Solids | ND r | nL/L/hr | 0.20 | 0.20 | 1 | | 05/30/14 07:45 | | |
| 300.0 IC Anions 28 Days | Analytical | Method: EPA | 300.0 | | | | | | |
| Sulfate | 443 r | ng/L | 50.0 | 4.9 | 50 | | 06/01/14 23:57 | 14808-79-8 | |



Project:

NPDES MONTHLY (LEADWOOD)

Pace Project No.: 60170146

| Sample: LEADWOOD UPSTREAM | Lab ID: 6 | 0170146003 | Collected | d: 05/28/1 | 10:20 | Received: 05/ | 29/14 08:30 Ma | atrix: Water | |
|------------------------------|-------------------|---------------|------------|--------------|--------|----------------|----------------|--------------|------|
| | | | Report | | | | | | |
| Parameters | Results | Units | Limit | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
| 200.7 Metals, Total | Analytical M | lethod: EPA 2 | 00.7 Prepa | ration Meth | od: EP | A 200.7 | | | |
| Cadmium | ND ug/ | /L | 5.0 | 0.56 | 1 | 05/30/14 17:00 | 06/02/14 14:14 | 7440-43-9 | |
| Calcium | 35700 ug/ | ′L | 100 | 7.8 | 1 | 05/30/14 17:00 | 06/02/14 14:14 | 7440-70-2 | |
| Lead | 2.4J ug/ | ′L | 5.0 | 2.2 | 1 | 05/30/14 17:00 | 06/02/14 14:14 | 7439-92-1 | |
| Magnesium | 21400 ug/ | ′L | 50.0 | 17.0 | 1 | 05/30/14 17:00 | 06/02/14 14:14 | 7439-95-4 | |
| Total Hardness by 2340B | 177000 ug/ | ′L | 500 | | 1 | 05/30/14 17:00 | 06/02/14 14:14 | | |
| Zinc | ND ug/ | ′L | 50.0 | 12.5 | 1 | 05/30/14 17:00 | 06/02/14 14:14 | 7440-66-6 | |
| 200.7 Metals, Dissolved (LF) | Analytical M | fethod: EPA 2 | 00.7 Prepa | aration Meth | od: EP | A 200.7 | | | |
| Cadmium, Dissolved | ND ug/ | /L | 5.0 | 0.56 | 1 | 06/02/14 17:00 | 06/03/14 15:47 | 7440-43-9 | |
| Lead, Dissolved | ND ug/ | /L | 5.0 | 2.2 | 1 | 06/02/14 17:00 | 06/03/14 15:47 | 7439-92-1 | |
| Zinc, Dissolved | ND ug/ | /L | 50.0 | 12.5 | 1 | 06/02/14 17:00 | 06/03/14 15:47 | 7440-66-6 | |
| 2540D Total Suspended Solids | Analytical M | lethod: SM 25 | 540D | | | | | | |
| Total Suspended Solids | 10 mg | ı/L | 5.0 | 5.0 | 1 | | 05/30/14 10:03 | | |
| 300.0 IC Anions 28 Days | Analytical M | fethod: EPA 3 | 0.00 | | | | | | |
| Sulfate | 13.3 mg | ı/L | 2.0 | 0.20 | 2 | | 06/02/14 00:11 | 14808-79-8 | |



Project:

NPDES MONTHLY (LEADWOOD)

Pace Project No.: 60170146

| Sample: LEADWOOD DOWNSTREAM | Lab ID: | 60170146004 | Collected | d: 05/28/1 | 4 12:25 | Received: 05/ | 29/14 08:30 Ma | atrix: Water | |
|------------------------------|-----------------|---------------|-------------|-------------|---------|----------------|----------------|--------------|------|
| | | | Report | | | | | | |
| Parameters | Results | Units | Limit | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
| 200.7 Metals, Total | Analytical | Method: EPA 2 | .00.7 Prepa | ration Metf | nod: EP | A 200.7 | | | |
| Cadmium | ND u | g/L | 5.0 | 0.56 | 1 | 05/30/14 17:00 | 06/02/14 14:20 | 7440-43-9 | |
| Calcium | 38100 u | g/L | 100 | 7.8 | 1 | 05/30/14 17:00 | 06/02/14 14:20 | 7440-70-2 | |
| Lead | 7.8 u | g/L | 5.0 | 2.2 | 1 | 05/30/14 17:00 | 06/02/14 14:20 | 7439-92-1 | |
| Magnesium | 22300 u | g/L | 50.0 | 17.0 | 1 | 05/30/14 17:00 | 06/02/14 14:20 | 7439-95-4 | |
| Total Hardness by 2340B | 187000 u | g/L | 500 | | 1 | 05/30/14 17:00 | 06/02/14 14:20 | | |
| Zinc | 25.1J u | g/L | 50.0 | 12.5 | 1 | 05/30/14 17:00 | 06/02/14 14:20 | 7440-66-6 | |
| 200.7 Metals, Dissolved (LF) | Analytical | Method: EPA 2 | 200.7 Prepa | ration Meth | nod: EP | PA 200.7 | | | |
| Cadmium, Dissolved | ND u | g/L | 5.0 | 0.56 | 1 | 06/02/14 17:00 | 06/03/14 15:50 | 7440-43-9 | |
| Lead, Dissolved | ND u | g/L | 5.0 | . 2.2 | 1 | 06/02/14 17:00 | 06/03/14 15:50 | 7439-92-1 | |
| Zinc, Dissolved | ND u | g/L | 50.0 | 12.5 | 1 | 06/02/14 17:00 | 06/03/14 15:50 | 7440-66-6 | |
| 2540D Total Suspended Solids | Analytical | Method: SM 25 | 540D | | | | | | |
| Total Suspended Solids | ND m | ıg/L | 5.0 | 5.0 | 1 | | 05/30/14 10:03 | | |
| 300.0 IC Anions 28 Days | Analytical | Method: EPA 3 | 0.00 | | | | | | |
| Sulfate | 20.4 m | ng/L | 2.0 | 0.20 | 2 | | 06/02/14 00:26 | 14808-79-8 | |



Project:

NPDES MONTHLY (LEADWOOD)

Pace Project No.:

60170146

QC Batch:

MPRP/27444

Analysis Method:

EPA 200.7

QC Batch Method:

EPA 200.7

Analysis Description:

200.7 Metals, Total

Associated Lab Samples:

60170146001, 60170146002, 60170146003, 60170146004

METHOD BLANK: 1386246

Associated Lab Samples:

60170146001, 60170146002, 60170146003, 60170146004

| | Blank | Reporting | | |
|-------|--------------------------------------|--|---|--|
| Units | Result | Limit | Analyzed | Qualifiers |
| ug/L | ND | 5.0 | 06/02/14 13:56 | |
| ug/L | ND | 100 | 06/02/14 13:56 | |
| ug/L | ND | 5.0 | 06/02/14 13:56 | |
| ug/L | ND | 50.0 | 06/02/14 13:56 | • |
| ug/L | ND | 500 | 06/02/14 13:56 | |
| ug/L | ND | 50.0 | 06/02/14 13:56 | |
| | ug/L ug/L ug/L ug/L ug/L | Units Result ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND | Units Result Limit ug/L ND 5.0 ug/L ND 100 ug/L ND 5.0 ug/L ND 50.0 ug/L ND 500 | Units Result Limit Analyzed ug/L ND 5.0 06/02/14 13:56 ug/L ND 100 06/02/14 13:56 ug/L ND 5.0 06/02/14 13:56 ug/L ND 50.0 06/02/14 13:56 ug/L ND 500 06/02/14 13:56 ug/L ND 500 06/02/14 13:56 |

| LABORATORY | CONTROL | SAMPLE: |
|------------|---------|---------|
|------------|---------|---------|

1386247

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|-------------------------|-------|----------------|---------------|--------------|-----------------|------------|
| Cadmium | ug/L | 1000 | 987 | 99 | 85-115 | |
| Calcium | ug/L | 10000 | 9450 | 94 | 85-115 | |
| Lead | ug/L | 1000 | 1000 | 100 | 85-115 | |
| Magnesium | ug/L | 10000 | 9660 | 97 | 85-115 | |
| Total Hardness by 2340B | ug/L | | 63400 | | | |
| Zinc | ug/L | 1000 | 983 | 98 | 85-115 | |

| MATRIX SPIKE & MATRIX SE | PIKE DUPLICAT | E: 13862 | 48 | | 1386249 | | | | | | | |
|--------------------------|---------------|-----------|-------------|--------------|---------|--------|-------|-------|--------|-----|-----|------|
| | 60 | 170145001 | MS Spike | MSD Spike | MS | MSD | MS | MSD | % Rec | | Max | |
| Parameter | Units | Result | Conc. | Conc. | Result | Result | % Rec | % Rec | Limits | RPD | RPD | Qual |
| Cadmium | ug/L | ND ND | 1000 | 1000 | 1000 | 987 | 100 | 99 | 70-130 | 2 | 10 | |
| Calcium | ug/L | 104000 | 10000 | 10000 | 114000 | 112000 | 97 | 72 | 70-130 | 2 | 9 | |
| Lead | ug/L | 7.5 | 1000 | 1000 | 989 | 977 | 98 | 97 | 70-130 | 1 | 10 | |
| Magnesium | ug/L | 58800 | 10000 | 10000 | 68400 | 65700 | 96 | 68 | 70-130 | 4 | 9 | M1 |
| Total Hardness by 2340B | ug/L | 503000 | | | 567000 | 549000 | | | | 3 | | |
| Zinc | ua/L | 137 | 1000 | 1000 | 1090 | 1080 | 96 | 94 | 70-130 | 1 | 11 | |

| MATRIX SPIKE SAMPLE: | 1386250 | | | | | | |
|-------------------------|---------|-----------------------|----------------|--------------|-------------|-----------------|------------|
| Parameter | Units | 60170040002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
| Cadmium | ug/L | 1.3J | 1000 | 994 | 99 | 70-130 | |
| Calcium | ug/L | 73600 | 10000 | 49400 | -241 | 70-130 N | 11 |
| Lead | ug/L | 33.6 | 1000 | 1000 | 97 | 70-130 | |
| Magnesium | ug/L | 44100 | 10000 | 33500 | -106 | 70-130 N | 11 |
| Total Hardness by 2340B | ug/L | 365000 | | 261000 | | | |
| Zinc | ug/L | 470 | 1000 | 985 | 52 | 70-130 N | 11 |

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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Project:

NPDES MONTHLY (LEADWOOD)

Pace Project No.:

60170146

QC Batch:

MPRP/27463

Analysis Method:

EPA 200.7

QC Batch Method:

EPA 200.7

Analysis Description:

200.7 Metals, Dissolved

Associated Lab Samples: 60170146003, 60170146004

METHOD BLANK: 1387206

Matrix: Water

Date: 06/04/2014 04:26 PM

Associated Lab Samples: 60170146003, 60170146004

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|--------------------|-------|-----------------|--------------------|----------------|------------|
| Cadmium, Dissolved | ug/L | ND | 5.0 | 06/03/14 15:23 | |
| Lead, Dissolved | ug/L | ND | 5.0 | 06/03/14 15:23 | |
| Zinc, Dissolved | ug/L | ND | 50.0 | 06/03/14 15:23 | |

| LABORATORY CONTROL SAMPLE: | 1387207 | | | | | |
|----------------------------|---------|-------|--------|-------|--------|------------|
| | | Spike | LCS | LCS | % Rec | |
| Parameter | Units | Conc. | Result | % Rec | Limits | Qualifiers |
| Cadmium, Dissolved | ug/L | 1000 | 1010 | 101 | 85-115 | |
| Lead, Dissolved | ug/L | 1000 | 1040 | 104 | 85-115 | |
| Zinc, Dissolved | ug/L | 1000 | 1030 | 103 | 85-115 | |

| MATRIX SPIKE & MATRI | X SPIKE DUPLICAT | E: 13872 | 08 | | 1387209 | | | | | | | |
|----------------------|------------------|-------------------------|-------|-------|---------|--------|-------|-------|--------|-----|-----|------|
| | 60: | MS 60170130001 Spike | | | MS | MSD | MS | MSD | % Rec | | Max | |
| | 00 | 170130001 | Spike | Spike | IVIO | MOD | | | | | | |
| Parameter | Units | Result | Conc. | Conc. | Result | Result | % Rec | % Rec | Limits | RPD | RPD | Qual |
| Cadmium, Dissolved | ug/L | ND | 5000 | 5000 | 5380 | 5330 | 107 | 107 | 70-130 | 1 | 10 | |
| Lead, Dissolved | ug/L | ND | 5000 | 5000 | 4870 | 4830 | 97 | 96 | 70-130 | 1 | 10 | |
| Zinc, Dissolved | · ug/L | 4360 | 5000 | 5000 | 9310 | 9260 | 99 | 98 | 70-130 | 1 | 11 | |

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.





Project:

NPDES MONTHLY (LEADWOOD)

Pace Project No.:

60170146

QC Batch:

WET/48143

Analysis Method:

SM 2540D

QC Batch Method:

SM 2540D

Analysis Description:

2540D Total Suspended Solids

Associated Lab Samples:

60170146001, 60170146002, 60170146003, 60170146004

METHOD BLANK: 1386168 Associated Lab Samples:

Parameter

60170146001, 60170146002, 60170146003, 60170146004

Blank

Reporting

Result

Limit

Analyzed

Total Suspended Solids

mg/L

Units

ND

5.0 05/30/14 09:58

SAMPLE DUPLICATE:

1386169

Parameter

Units mg/L

60170044004 Result

Dup Result

775

770

RPD

1

Max **RPD**

10

Qualifiers

Qualifiers

SAMPLE DUPLICATE: 1386170

Date: 06/04/2014 04:26 PM

Total Suspended Solids

Parameter

Units

60170145001 Result

Dup Result

RPD

Max RPD

Qualifiers

Total Suspended Solids mg/L ND 8.0 10

Results presented on this page are In the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project:

NPDES MONTHLY (LEADWOOD)

Pace Project No.:

60170146

QC Batch:

WETA/29657

Analysis Method:

EPA 300.0

QC Batch Method:

EPA 300.0

Analysis Description:

300.0 IC Anions

Associated Lab Samples:

60170146001, 60170146002, 60170146003, 60170146004

METHOD BLANK: 1386865

Matrix: Water

Associated Lab Samples:

60170146001, 60170146002, 60170146003, 60170146004

Blank Result Reporting Limit

Analyzed

Qualifiers

Sulfate

mg/L

ND

06/01/14 22:30

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

1386866

Units

Units

Spike

LCS Result

LCS % Rec % Rec Limits

Qualifiers

Sulfate

mg/L

Conc.

5.1

103

90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1386867

MSD

ND

1386868 MS

6.4

5

MSD

MSD

% Rec

99

Max

Sulfate

Sulfate

Parameter

204168001 Units Result

Units

Spike Conc. 1.5 5

MS

Spike Conc. Result 5

Result 6.4

% Rec 97

MS

% Rec

Limits 80-120 RPD RPD Qual 15

MATRIX SPIKE SAMPLE:

Date: 06/04/2014 04:26 PM

Parameter

1386869

mg/L

mg/L

204168002 Result

Spike Conc.

MS Result

6.1

MS % Rec

102

% Rec Limits

80-120

Qualifiers

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.





QUALIFIERS

Project: NPDES MONTHLY (LEADWOOD)

Pace Project No.: 60170146

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

Date: 06/04/2014 04:26 PM

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:

NPDES MONTHLY (LEADWOOD)

Pace Project No.: 6

Date: 06/04/2014 04:26 PM

60170146

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|-------------|---------------------|-----------------|------------|-------------------|---------------------|
| 60170146001 | LEADWOOD 001 | EPA 200.7 | MPRP/27444 | EPA 200.7 | ICP/20771 |
| 60170146002 | LEADWOOD 002 | EPA 200.7 | MPRP/27444 | EPA 200.7 | ICP/20771 |
| 60170146003 | LEADWOOD UPSTREAM | EPA 200.7 | MPRP/27444 | EPA 200.7 | ICP/20771 |
| 60170146004 | LEADWOOD DOWNSTREAM | EPA 200.7 | MPRP/27444 | EPA 200.7 | ICP/20771 |
| 60170146003 | LEADWOOD UPSTREAM | EPA 200.7 | MPRP/27463 | EPA 200.7 | ICP/20782 |
| 60170146004 | LEADWOOD DOWNSTREAM | EPA 200.7 | MPRP/27463 | EPA 200.7 | ICP/20782 |
| 60170146001 | LEADWOOD 001 | SM 2540D | WET/48143 | | |
| 60170146002 | LEADWOOD 002 | SM 2540D | WET/48143 | | |
| 60170146003 | LEADWOOD UPSTREAM | SM 2540D | WET/48143 | | |
| 60170146004 | LEADWOOD DOWNSTREAM | SM 2540D | WET/48143 | | |
| 60170146001 | LEADWOOD 001 | SM 2540F | WET/48139 | | |
| 60170146002 | LEADWOOD 002 | SM 2540F | WET/48139 | | |
| 60170146001 | LEADWOOD 001 | EPA 300.0 | WETA/29657 | | |
| 60170146002 | LEADWOOD 002 | EPA 300.0 | WETA/29657 | | |
| 60170146003 | LEADWOOD UPSTREAM | EPA 300.0 | WETA/29657 | | |
| 60170146004 | LEADWOOD DOWNSTREAM | EPA 300.0 | WETA/29657 | | |



Sample Condition Upon Receipt

WO#:60170146

| Client Name: DRC | , | | Optional |
|--|-----------------------|------------------------|------------------------------------|
| Courier: Fed Ex X UPS □ USPS □ Client □ | Commercial □ Pa | ace Other | Proj Due Date: |
| Tracking #: 770/1736 9500 | Pace Shipping Label U | Jsed? Yes 🗆 No 🗹 | Proj Name: |
| Custody Seal on Cooler/Box Present: Yes A No | □ Seals intact: Y | es ✓ No □ | |
| Packing Material: Bubble Wrap □ Bubble 8a | ags□ Foam [| □ None □ Other & | SZPIC |
| Thermometer Used: (-239) T-194 | | | on ice, cooling process has begun. |
| Cooler Temperature: | (circle | one) Date and in | itials of person examining |
| Temperature should be above freezing to 6°C | | contents: | DI) Chary |
| Chain of Custody present: | 17 Yes □No □N/A | 1 | |
| Chain of Custody filled out: | Yes ONO ON/A | 2. | |
| Chain of Custody relinquished: | Yes ONO ON/A | 3. | |
| Sampler name & signature on COC: | Ayes □No □N/A | 4. | |
| Samples arrived within holding time: | ØYes □No □N/A | 5. | |
| Short Hold Time analyses (<72hr): | ZYes □No □N/A | 6. S·S | |
| Rush Turn Around Time requested: | □Yes ØNo □N/A | 7. | |
| Sufficient volume: | ✓Yes □No □N/A | 8. | |
| Correct containers used: | Yes ONO ON/A | | |
| Pace containers used: | Yes □No □N/A | 9. | |
| Containers intact: | Yes □No □N/A | 10. | |
| Unpreserved 5035A soils frozen w/in 48hrs? | □Yes □No ☑N/A | 11. | |
| Filtered volume received for dissolved tests? | □Yes □No ∕□N/A | 12. | |
| Sample labels match COC: | Yes □No □N/A | | |
| Includes date/time/ID/analyses Matrix: | WT | 13. | |
| All containers needing preservation have been checked. | Yes ONO ONA | | |
| All containers needing preservation are found to be in compliance with EPA recommendation. | Lyes ONO ON/A | 14. | |
| Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics | □Yes ∕ No | | ot # of added reservative |
| Trip Blank present: | □Yes □No ŪN/A | | |
| Pace Trip Blank lot # (if purchased): | | 15. | |
| Headspace in VOA vials (>6mm): | □Yes □No IN/A | | |
| | | 16. | |
| Project sampled in USDA Regulated Area: | □Yes □No ⊅N/A | 17. List State: | |
| Client Notification/ Resolution: Copy C | COC to Client? Y / | N Field Data Required? | Y / N |
| Person Contacted: | Date/Time: | | |
| Comments/ Resolution: | | | |
| from Church | | F/20/4 4 | |
| | | 5/29/14 | |
| Project Manager Review: | | Date: | |



CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT, All relevant fields must be completed accurately.

| Section Required | A d Client Information: | | | | | | | | | | | _ | | | | | and the second | Pi | age: | 1 | of | 1 | | | | | | | | | | |
|--|---|---------------|---|-----------|---------------|-----------------|------------|------------|-----------------|------------------|----------|------|----------|----------|-------|----------|----------------|------------|---------|----------|---------------|-------|------|-------|---------|------|-------------------------|--------------------------|--------|--------------|--------------|-----|
| Company | The Doe Run Company | Report To: A | eport To: Amy Sanders Attention: Amy Sanders | | | | | | | | | | | L | | | | | | | | | | | | | | | | | | |
| Address: | PO Box 500 | Сору То: | ppy To: Company Name: The Doe Run Compa | | | | | | | | | mpai | ny | | | RE | GUI | LATO | RY | AGE | NC | 4 | | | | | | | | | | |
| | Viburnum, MO 65566 | | | | | | | _ | Addre | ess: | PO | Э Во | x 500 | , Vib | urnu | ım, N | MO 6 | 3556 | 36 | Г | NF | PDES | Г | G | ROU | ND V | NATE | RF | DRIN | KING V | VATER | - 1 |
| Email To | asanders@doerun.com | Purchase Ord | er No.: | | | | | - | Pace C | | | | | - | | | | | | 1 | US | ST | ٦ | R | CRA | | | ₽ | OTHE | R | | |
| Phone: | 573-689-4535 Fax: 573-244-8179 | Project Name: | NP | DES Mon | thly (Lead | dwood) | | | Pace F | Project | Ja | mie | Chur | ch | | | - | | | S | Site Location | | | | | | | | | | | |
| | ed Due Date/TAT: 5 - 7 Days | Project Numb | | | | | | | Manag Pace F | per: Profile: | #: | | - | | | | | | | | | STAT | F. | | мо | | | | | | | |
| nequesi | | , | | | | | | | _ | | | | | | _ | Sec. | Re | - | eter | IAn | | | 1000 | 1 (Y) | N | | VIII | <i>}}}}</i> | | | | |
| Requested An | | | | | | | | | | T | T | | T | T | T | | | | | | | | | | | | | | | | | |
| | Section D Valid Matrix C Required Client Information MATRIX | CODE | C=COMP) | | COLL | ECTED | | | | | Pre | eser | vative | es | | N IA | N | N | NN | IN | N | | | | | | | | | | | |
| | DRINKING WATER WATER | DW WT | C=CO | | | | | S O | | П | T | П | T | T | | | | T | 7 | T | | П | T | T | T | | | | | | | |
| | WASTE WATER PRODUCT | P | | STA | POSITE NRT | COMPO END/GI | RAB | COLLECTION | | | | | | | | | | | | 1 | Dissolved | | 1 | | | | Residual Chlorine (Y/N) | | | | | |
| | SOIL/SOLID OIL | OL OL | (S=GRAB | | | | | SOLL | SS | | | | | 1 | | 글 | | S | 1 | 5 | SSO | П | | | | | 96 | 60 | 517 | 414 | 6 | . 1 |
| | SAMPLE ID | AD | וע | | 1 | | | AT | CONTAINERS | | | | | | | Test | | Solids | Total | 2 | Ö | | - | | | | lori | 00 | 1/ | 0, 7. | , - | |
| | (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE | OT TS | YPE SU | | | | | TEMP AT | E | Ved | | | | _ | | Sis | | | 2 | = 1 | Zn. | | | | | | | | | | | 1 |
| # | | | LE L | 1 | | | | LET | 8 | ese | 4 . | | | a 13 | | aly | | ap. | | Sec. | Pb, | | | | | | dua | | | | | 1 |
| ITEM | | | MATRIX CODE SAMPLE TYPE | | | | | SAMPLE | # OF | Unpreserved | H2SO4 | 오 | NaOH | Methanol | Other | Analysis | SS | Settleable | Sulfate | Hardness | Cd, F | П | - 1 | | | | Resi | Pace | Proj | act No | ./ Lab I. | n |
| _ = | | | | DATE | TIME | DATE | 12/0 | S | _ | + | 1 1 | + | 2 | 12 | H | | | x I | SIC | 1 | 10 | Н | + | 06 | 34 | _ | _ | 18/01 | | | | (u) |
| 1 | Leadwood 001 | | w G | | - | 5/28/14 | | ⊢ | 3 | 2 | 1 | + | + | + | Н | | - | ~ | X | <u> </u> | + | Н | + | 13 | 30 | + | | A. miles | 1157 | y ~ | IBVIU | wz |
| 2 | Leadwood 002 | | w G | 1 | + | 5/28/14 | 1153 | ⊢ | 3 | 1 | 1 | 1 | + | + | Н | | | X | × | + | + | H | + | + | + | + | N | 1 2101 | | | 1802 | |
| 3 | Leadwood Upstream | | w G | 1 | - | 5/28/14 | 1225 | H | 2 | 1 | 1 | - | H | + | Н | | X | + | X I | + | 1 | H | + | + | + | + | N | | | | L | ly |
| 4 | Leadwood Downstream | | w G | - | + | 5/28/14 | 1200 | ⊢ | 2 | ++ | ++1 | + | + | + | Н | | X | + | × | × | × | Н | + | + | + | + | 1 | | | 1 | - | 1 |
| 5 | | | - | - | + | 1 | - | Ͱ | + | + | + | + | H | + | Н | | + | + | + | + | + | Н | + | + | + | + | H | | | | | |
| 6 | | | - | - | + | - | - | ┝ | \vdash | + | + | + | + | + | H | | \dashv | + | + | + | + | Н | + | + | + | + | H | | | - | | |
| 7 | | | + | - | + | - | - | ╀ | + | + | \vdash | + | + | + | Н | | \dashv | + | + | + | + | Н | + | + | + | + | H | | | | | |
| 8 | | | - | - | + | - | - | ╁ | + | + | + | + | \vdash | + | Н | | \dashv | + | + | + | + | H | + | + | + | + | Н | | | | | |
| 9 | | | - | + | + | - | | ╁ | + | + | | + | H | + | Н | | | + | + | + | + | Н | + | + | + | + | H | | | | | |
| 10 | | -+ | + | - | + | - | | ╁ | + | + | + | + | H | + | Н | | | + | + | + | + | Н | + | + | + | + | Н | | | | | |
| 11 | | | + | + | + | - | - | ╁ | + | + | \vdash | + | H | 1 | Н | | 1 | + | + | + | + | Н | + | + | + | + | H | | | | | - |
| 12 | l | | | HOUSE DV | / AFFW IAT | TON | DATI | _ | | TIME | | | | CCE | PTED | BY | AFE | HIAT | ION | 2000 | | DATE | | TI | ME | - | _ | SAM | PLE CO | ONDITIO | ONS | |
| * 200 B | ADDITIONAL COMMENTS RELINQUISHED BY / AF * 200.8 Total Recoeverable Metals | | | | AFFILIA | ION | DAII | | 1000 | | 200 | - | 7/ | 1 | | (100) | | 100000 | | | +, | p | | | | + | , | 1 | 1 | / | . / | |
| | | | | Larry Hop | okins | | 5/28/ | 14 | 1/ | 40 | 4 | 4 | 11/0 | | | 1 | 14 | SZ | | | 15 | 10 | 7 | 08 | 32 | 4 | 1.0 | Y | + | 7 | - | |
| **analyzed within 24 hours with flagged data | | | | | | | | | | | / | | | | | | | | | | | 1 | | | \perp | | | _ | | | | |
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| | Page | | | | SAMPL | ER NAME | AND SIGN | ATL | RE | | | | | | | | | | 1 | 7 | | 1 | / | / |) | | ပ္ | 5 2 | ealed | 2 | Intact | _ |
| | e 16 | | | | | PRINT Na | me of SAMF | PLEF | : Lan | ту Но | opkins | S | The same | | | | 4 | 15 |)X | 21 | 1 | 6 | 1 | O | D | | Temp in °C | Received or Ice (Y/N) | dy S | Cooler (Y/N) | ni seldi | Y/W |
| | of 16 | | SIGNATURE of SAMPLER: Larry Hopkins (MM/DD/YY): | | | | | | | | | | 1 | • | // | 28/1 | 4 | | 1 | Ter | Rec 5 | Custo | Š | Sam | | | | | | | | |